

## AI SEVERITY AND DEM RESPONSE

### INTRODUCTION

More **severe** disease outbreaks are more dangerous to public health and the environment. They entail more frequent and debilitating illnesses or mortalities as well as diminished capacities for containing and remediating the threat. Both the conditions of the outbreak (e.g., specific vectors, time of year, etc.) and the characteristics of the pathogen affect incident severity. In general, the **level of response** (its scale and intensity) will increase with the severity of the threat.

**Avian Influenza (AI) viruses** are normally classified by a combination of two groups of proteins found on the surface of the virus: hemagglutinin proteins (H), of which there are 16 (H1-H16), and neuraminidase proteins (N), of which there are 9 (N1-N9). These 25 types, in turn, encompass a total of more than a hundred strains. AI strains also are divided into two groups based on the **pathogenicity** of the virus – the ability of the virus to produce disease.

**Low Pathogenic Avian Influenza (LPAI):** Most AI strains are classified as low pathogenic and cause few clinical signs in infected birds. LPAI generally does not pose a significant health threat to humans. However, LPAI is monitored because two strains of LPAI – the H5 and H7 strains – can mutate into highly pathogenic forms.

**Highly Pathogenic Avian Influenza (HPAI):** This is a more pathogenic type of avian influenza that is frequently fatal to birds and easily transmissible between susceptible species. The strain that is currently of concern in Southeast Asia and Europe is the H5N1 HPAI virus.

A **pandemic** is a global outbreak of human disease. An influenza pandemic occurs after a new influenza A virus emerges, for which there is little or no immunity in the human population, when that virus begins to cause serious illness, and the virus then spreads easily person-to-person worldwide.

In the [WHO Global Influenza Preparedness Plan](http://www.who.int/csr/resources/publications/influenza/GIP_2005_5Eweb.pdf) (2005) <[http://www.who.int/csr/resources/publications/influenza/GIP\\_2005\\_5Eweb.pdf](http://www.who.int/csr/resources/publications/influenza/GIP_2005_5Eweb.pdf)>, the World Health Organization organizes recommendations for response to AI around “periods” and “phases” of pandemic, as follows:

Period	Phase	Risk to Public Health
Inter-pandemic Period	Phase 1	<b>Low risk of human cases.</b> No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.
	Phase 2	<b>Higher risk of human cases.</b> No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.
Pandemic Alert Period	Phase 3	<b>No or very limited human-to-human transmission.</b> Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.
	Phase 4	<b>Evidence of increased human-to-human transmission.</b> Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.
	Phase 5	<b>Evidence of significant human-to-human transmission.</b> Larger cluster(s) but human-to-human spread is still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).
Pandemic Period	Phase 6	<b>Efficient and sustained human-to-human transmission.</b> Pandemic: Increased and sustained transmission in the general population.

An HPAI subtype of H5N1 has been in Phase 3 since 1993-4, but no one can be sure how long this phase will last or if the next one will be more or less severe. The [Current WHO Phase of Pandemic Alert](http://www.who.int/csr/disease/avian_influenza/phase/en/) is available on-line at  
<[http://www.who.int/csr/disease/avian\\_influenza/phase/en/](http://www.who.int/csr/disease/avian_influenza/phase/en/)>

## EMERGENCY PLANNING MATRIX:

The emergency response plans most relevant to DEM's AI response are its [Animal Disease Plan](#) (ERP Section 6-9, which includes and AI Annex), [Animal Disaster / Animal Care Plan](#) (ERP Section 6-8), and [Continuity of Operation Plan](#) (ERP Section 6-14). These plans are implemented in proportion to the severity of the AI threat:

WHO Assessment		RI DEM Assessment	
Period	Phase	Severity Level	DEM Strategy and Plan
Inter-pandemic Period	Phase 1	Level 0	Normal, Passive Disease Surveillance
	Phase 2	Level 1	Increased Readiness Consult Animal Disease Plan
Pandemic Alert Period	Phase 3-4	Level 2	Active Surveillance Use Animal Disease Plan
	Phase 5	Level 3	Containment Use Animal Disease Plan and Consult Animal Disaster Plan
Pandemic Period	Phase 6	Level 4	Eradication and Recovery Use Animal Disease Plan, Animal Disaster Plan, and Continuity of Operation Plan

As risks to human health increase (Phase 5 or higher), DEM is apt to shift its role from leading to supporting unified State response. DEM will lead State response to an AI outbreak when it is confined to agricultural livestock, pets, or wildlife. The Department of Health will lead State response to a human pandemic.

## STANDARD DEM PROCEDURES FOR ASSESSING AI RISK

In consultation with regional, national and/or international authorities, the Rhode Island State Veterinarian normally determines the severity of actual or potential outbreaks of zoonotic or highly contagious animal disease, which in turn determines the appropriate level of response. In general, the level of response will increase with the likelihood of infection, illness, or death within the state.

In the case of avian influenza, DEM response will normally be proportionate to the evidence of actual or likely AI fatalities among susceptible species. For example, typically:

- HPAI is of more concern than LPAI.
- H5 and H7 strains are of more concern than other strains of LPAI.
- Confirmed AI infections among poultry are of more concern than among wildfowl.
- Confirmed AI infections among mammals are of more concern than among birds.

For some strains of AI (e.g., H5N1 HPAI), the mere geographic proximity of the pathogen may be enough to raise the level of response.

Because of this variability among AI strains, the determination of incident severity depends on an assessment of both environmental vulnerabilities and the particular pathogen. Laboratory tests are likely to be as determinative as clinical evidence (for example, in estimating how likely a virus is to mutate into a more contagious, pathogenic, or zoonotic form). These are among the considerations that the State Veterinarian will normally discuss with USDA APHIS Veterinary Services in setting and readjusting assessments of incident severity and appropriate response.

## **TRIGGERS AND STRATEGIES FOR LEVELS OF DEM RESPONSE TO AI IN BIRDS**

### **Level 0 – Normal, Passive Surveillance**

Trigger: No confirmed HPAI infection in North America

Strategy: Passive surveillance

- The RI DEM Division of Agriculture (DAG) and Division of Fish and Wildlife (DFW) maintain normal surveillance and readiness to respond to FAD.
- DAG promotes biosecurity, especially among at-risk growers, and the reporting of suspicious livestock illness.
- DAG inspects and certifies the health of livestock before interstate sales or shipment.
- The State Veterinarian encourages and receives reports of suspicious illness among livestock
- In cooperation with the USDA, APHIS, Veterinary Services, the State Veterinarian investigates suspicious livestock illness.

### **Level 1 – Increased Readiness**

Trigger: Confirmed HPAI infection in North America, but not in the United States.

Strategy: Level 0 plus increased surveillance:

- DAG and DFW increase surveillance and readiness to respond to FAD.
- The State Veterinarian advises growers and private practice veterinarians to beware of specific clinical symptoms of HPAI.
- Officers of RI DEM Division of Law Enforcement (EPOs) increase enforcement of verification of animal health certification of livestock in-transit.

### **Level 2 – Active Surveillance**

Trigger: HPAI confirmed in the United States, but not in Rhode Island

Strategy: Level 1 plus active surveillance:

- DEM reviews and updates, as necessary, FAD response plans, response resources, and public information on HPAI.
- The State Veterinarian suspends the import of affected or potentially affected animals from the impacted states, pending certified HPAI eradication in those states.
- DAG notifies the public, poultry growers, and response partners -- particularly the RI Department of Health and USDA -- of the disease threat and the results of surveillance of RI livestock.

### **Level 3 – Containment**

Trigger: HPAI confirmed in Rhode Island

Strategy: Level 2 plus containment measures:

- In cooperation with HEALTH, DAG and DFW issue warnings about safe handling of birds to avoid human infection.
- The State Veterinarian issues a “stop animal movement” order, requiring state and local law enforcement to bar animal movement across state lines.
- The State Veterinarian quarantines the site of any HPAI poultry infection and bars movement of all livestock to or from all agricultural premises within 2-miles of that site.
- DAG issues an emergency order, requiring that all poultry growers practice biosecurity and register as NPIP (National Poultry Improvement Program) participants within 6 miles of the infected site.
- If HPAI is confirmed in migratory birds, DFW closes wildlife management areas to visitors or hunters.
- In cooperation with response partners, DAG and DFW begin vigilant surveillance of all potential affected species within 6 miles of a confirmed infection.

### **Level 4: -- Eradication and Recovery**

Trigger: HPAI infection confirmed in several, dispersed sites (e.g., at least one case in two different counties).

Strategy: Level 3 plus eradication and recovery measures

- In cooperation with response partners, DEM requests that the Governor issue an appropriate emergency declaration.
- DEM joins emergency partners in incident command to respond to the HPAI outbreak.
- DAG requests USDA assistance to eradicate HPAI.
- DAG declares that all poultry operations that do not have sufficient biosecurity are subject to preemptive depopulation. (Those that are not NPIP participants may not be indemnified.)
- Depopulate and properly dispose of infected and contact or epidemiologically linked poultry flocks.
- Establish biosecurity and testing measures to allow for certification of livestock health.
- Support recovery of commercial poultry operations.

Note: RI DEM emergency response plans comply with the National Incident Management System (NIMS) and the National Response Plan (NRP). Hence, in consultation with private, state, regional, and national response partners or unified command, the agency must reserve the right to revise plans to best prevent and mitigate a particular foreign animal disease (FAD) threat, such as an outbreak of HPAI. Strategies and tactics are subjects to revision with the benefit of incident-specific information including, but not limited to, virus strain, pathogenicity, morbidity and mortality, movement of birds and products, and additional epidemiological information obtained as a result of avian influenza investigations. This plan, then, is designed to guide rather than constrain DEM response.